

LISTING OF THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-56 (Canceled)

Claim 57 (Previously Presented)

An illumination maintenance system for maintaining a desired illumination profile in a space throughout at least a portion of a day where the illumination sources include daylight and artificial light, the system comprising:

- a first sensor for sensing an illumination level in at least a portion of the space;
- at least one electrically controllable window treatment for at least one opening for allowing daylight into the space, the window treatment selectively altering the amount of daylight entering the space through the opening;

- a plurality of electric lamps providing artificial light to supplement the daylight illumination of the space, the electric lamps being dimmable and being arranged in one or more zones in the space, the zones defining predefined volumes of the space, each zone having at least one lamp;

- a control system controlling the at least one window treatment and the plurality of electric lamps to maintain the desired illumination profile in the space, the at least one lamp of each zone being controllable to a dimming level to achieve a desired illumination level in the respective zone according to the desired illumination profile;

- the control system controlling the plurality of electric lamps so that the dimming level of each lamp is adjusted to achieve the desired illumination profile and compensate for the daylight illumination in the space throughout at least the portion of the day; and

- the control system further operating to adjust the at least one window treatment in the event of sun glare through the opening to reduce the sun glare;

- wherein the dimming level of each lamp is selected by the control system from one of a plurality of lighting presets, each preset comprising a predetermined combination of dimming

levels of the at least one lamp in each zone and wherein the control system adjusts the dimming level of the electric lamps toward a lighting preset that will result in an appropriate supplementing of the daylight illumination to achieve the desired illumination profile in the space; and

the control system operating such that when the desired illumination profile within a predefined tolerance is achieved, the control system stops varying the dimming levels of the lamps and the adjustment of the window treatment.

Claim 58 (Original)

The system of claim 57, wherein the dimming level of each lamp is selected by the control system from one of a plurality of lighting presets, each preset comprising a combination of dimming levels of the lamps and the control system selects a preset that will result in an appropriate supplementing of the daylight illumination to achieve the desired illumination profile in the space.

Claim 59 (Original)

The system of claim 57, further comprising at least one second sensor for sensing daylight illumination entering the space and providing an input to the control system to control the at least one window treatment.

Claim 60 (Original)

The system of claim 59, wherein the at least one second sensor provides an input to the control system to control the at least one window treatment to reduce sun glare.

Claim 61 (Original)

The system of claim 57, wherein the at least one first sensor provides an input to the control system to control the at least one window treatment and the plurality of electric lamps.

Claim 62 (Original)

The system of claim 57, further comprising a plurality of first sensors for sensing the illumination level in the space.

Claim 63 (Previously Presented)

The system of claim 62, wherein a combined output level of the first sensors is determined by averaging outputs of the plurality of first sensors.

Claim 64 (Original)

The system of claim 57, wherein the control system adjusts the window treatment to maximize the amount of daylight entering the space when the illumination level detected by said first sensor is too low.

Claim 65 (Original)

The system of claim 57, wherein the control system adjusts the window treatment to minimize the amount of daylight entering the space when the illumination level detected by said first sensor is too high.

Claim 66 (Original)

The system of claim 57, wherein the control system compares the illumination level in the space to first and second thresholds, the first threshold corresponding to a light level that is too dark and the second threshold corresponding to a light level that is too high.

Claim 67 (Previously Presented)

The system of claim 57, wherein the control system adjusts the sensitivity of the first sensor to compensate for the first sensor's differing sensitivity to different light sources.

Claim 68 (Original)

The system of claim 66, further wherein the control system has a main control loop in which the illumination level is compared to the first and second thresholds and a first subloop to select an appropriate dimming level of the plurality of electric lamps when the light level is too dark and a second subloop to select an appropriate dimming level of the plurality of electric lamps when the light level is too high.

Claim 69 (Original)

The system of claim 68, wherein the control system determines in the main control loop if the light level is acceptable.

Claim 70 (Original)

The system of claim 68, wherein the dimming levels comprise a plurality of preset dimming levels.

Claim 71 (Original)

The system of claim 62, wherein the control system employs a dead-band having upper and lower set points such that if the sensed illumination in the space is outside the dead-band, the window treatment is adjusted to bring the illumination level in the space within the dead-band.

Claim 72 (Original)

The system of claim 71, wherein the control system employs a time delay before moving the window treatment to bring the illumination level in the space back within the dead-band.

Claim 73 (Original)

The system of claim 72, wherein the time delay to bring the illumination level in the space back within the dead-band is shorter for high illumination levels than for low illumination levels.

Claim 74 (Original)

The system of claim 73, wherein the timing delay is reduced if daylight illumination is consistently high or consistently low.

Claim 75 (Original)

The system of claim 71, wherein during a time period when glare from the sun through the opening can occur, at least one set point of the dead-band can be varied to reduce glare.

Claim 76 (Original)

The system of claim 75, wherein a set point is variable during a time period determined by an estimated angle of the sun.

Claim 77 (Original)

The system of claim 76, wherein the set point is reduced during the time period when glare from the sun through the opening can occur.

Claim 78 (Original)

The system of claim 76, wherein the set point is variable during periods approximately two hours after sunrise and two hours before sunset.

Claim 79 (Original)

The system of claim 76, wherein the control system includes an astronomical time clock and the set point is calculated in response to the time determined by the time clock.

Claim 80 (Original)

The system of claim 57, wherein the sensor has a gain factor, and the control system adjusts the gain factor during the time period when glare from the sun through the opening can occur.

Claim 81 (Original)

The system of claim 71, wherein a user can manually adjust the window treatment, and further wherein at least one of the set points is temporarily adjusted after a manual adjustment to match the light level measured after the manual adjustment.

Claim 82 (Original)

The system of claim 81, wherein the control system reverts to a default set point after the light level exceeds a predefined dead-band around the temporary set point set after a manual adjustment.

Claim 83 (Original)

The system of claim 82, wherein the default set point is adjusted automatically after the control system detects a repeated manual adjustment of the window treatment.

Claim 84 (Original)

The system of claim 57, wherein the control system includes an astronomical time clock, and wherein the time of day data provided by the time clock is used to correct a spectral sensitivity property of the sensor.

Claims 85-93 (Canceled)**Claim 94 (Previously Presented)**

A method for maintaining a desired illumination profile in a space throughout at least a portion of a day where the illumination sources include daylight and artificial light, the method comprising:

sensing an illumination level in at least a portion of the space;

providing at least one electrically controllable window treatment for at least one opening for allowing daylight into the space, the window treatment selectively altering the amount of daylight entering the space through the opening;

supplementing the daylight illumination of the space with a plurality of electric lamps providing artificial light, the electric lamps being dimmable and being arranged in one or more zones in the space, the zones defining predefined volumes of the space, each zone having at least one lamp;

controlling with a control system responsive to the sensed illumination level the at least one window treatment and the plurality of electric lamps to maintain the desired illumination profile in the space, the step of controlling comprising adjusting the dimming level of the at least one lamp of each zone to achieve a desired illumination level in the respective zone according to the desired illumination profile and thereby maintain the desired illumination profile in the space and compensate for the daylight illumination in the space;

controlling with the control system the plurality of electric lamps so that the dimming level of each lamp is adjusted to achieve the desired illumination profile and compensate for the daylight illumination in the space throughout at least the portion of the day;

further adjusting with the control system the at least one window treatment in the event of sun glare through the opening to reduce the sun glare;

wherein the dimming level of each lamp is selected by the control system from one of a plurality of lighting presets, each preset comprising a predetermined combination of dimming levels of at least one lamp in each zone and wherein the control system adjusts the dimming level of the electric lamps toward a lighting preset that will result in an appropriate supplementing of the daylight illumination to achieve the desired illumination profile in the space;

stopping varying of the dimming levels of the lamps and the adjustment of the window treatment when the desired illumination profile within a predefined tolerance is achieved; and

repeating the above steps during the day to maintain the desired illumination profile throughout at least the portion of the day.

Claim 95 (Previously Presented)

An illumination maintenance system for maintaining a desired illumination profile in a space throughout at least a portion of a day where the illumination sources include daylight and artificial light, the system comprising:

at least one interior sensor for sensing an illumination level in at least a portion of the space;

at least one electrically controllable window treatment for at least one opening for allowing daylight into the space, the window treatment selectively altering the amount of daylight entering the space through the opening;

a plurality of electric lamps providing artificial light to supplement the daylight illumination of the space, the electric lamps being dimmable;

a control system controlling the at least one window treatment and the plurality of electric lamps to maintain the desired illumination profile in the space;

the control system controlling the plurality of electric lamps so that the dimming level of each lamp is adjusted to achieve the desired illumination profile and compensate for the daylight illumination in the space throughout at least a portion of the day;

wherein the control of the electric lamps is implemented based on an open loop control algorithm and the control of the at least one window treatment is implemented based on a closed loop control algorithm; and

wherein the control of both the electric lamps and the at least one window treatment is based on a signal representing a single input variable derived from the at least one interior sensor.

Claim 96 (Previously Presented)

The control system of claim 95 wherein the at least one interior sensor is replaced by a plurality of interior sensors whose output signals are processed by the control algorithms as a single input variable.

Claim 97 (Canceled)